



Technical Standard Order

Subject: **TSO-C141, AIRCRAFT FLUORESCENT LIGHTING BALLAST/FIXTURE EQUIPMENT**

1. **PURPOSE.** This technical standard order (TSO) prescribes the minimum performance standard that fluorescent lighting ballast/fixture equipment must meet in order to be identified with applicable TSO marking.
2. **APPLICABILITY.** The standards of this TSO apply to ballast/fixtures intended to be used in aircraft cabin fluorescent lighting systems. Design/construction features are incorporated which will allow this equipment to be operated without the hazards of smoke, fire, and electromagnetic interference.
3. **REQUIREMENTS.** Equipment that is to be so identified with the applicable TSO marking must meet the standards set forth in the Society of Automotive Engineers, Inc. (SAE), Aerospace Standard (AS) 4914, Revision A "Aircraft Fluorescent Lighting Ballast/Fixture Safety Design Standard," dated May 1999. Applicable environmental test procedures, specified in AS4914, refer to RTCA, Inc. (RTCA) Document No. DO-160C, "Environmental Conditions and Test Procedures for Airborne Equipment."
4. **MARKING.** Each aircraft fluorescent lighting ballast/fixture must be marked in accordance with 14 CFR § 21.607(d).
5. **DATA REQUIREMENTS.**
 - a. **Application Data.** In accordance with 14 CFR § 21.605 (a), the manufacturer must furnish the Manager, Aircraft Certification Office (ACO), Federal Aviation Administration (FAA), having purview of the manufacturer's facilities, one copy of the following technical data to support the FAA design and production approval:
 - (1) Operating instructions and equipment limitations. The limitations shall be sufficient to describe the operational capability of the equipment.
 - (2) Installation procedures and limitations. The limitations shall be sufficient to ensure that the appliance, when installed in accordance with the installation procedures, continues to meet the requirements of this TSO. The limitations shall include at least the following:

(a) A note with the following statement: "The conditions and tests required for TSO approval of this article are minimum performance standards. It is the responsibility of those installing this article either on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the TSO standards. TSO articles must be approved for installation. The article may be installed only if the installation is performed in accordance with the applicable airworthiness requirements or 14 CFR Part 43."

(b) When applicable, identification that the appliance is an incomplete or multi-use system describe the functions that are intended to be provided by the appliance.

(3) Schematic drawings as applicable to the installation procedures.

(4) Wiring diagrams as applicable to the installation procedures.

(5) Specifications.

(6) List of components by part number.

(7) Instructions for periodic maintenance and calibration which are necessary for continued airworthiness once the equipment is installed.

(8) An environmental qualification form as described in RTCA/DO-160C, Change 3, for each system component.

(9) Manufacturer's TSO qualification test report.

(10) Nameplate drawing.

b. Manufacturer Data. In addition to those data requirements that are to be furnished directly to the FAA, each manufacturer must have the following technical data available for review by the manager of the ACO having purview over the manufacturer's facility:

(1) A drawing list, enumerating all of the drawings and processes that are necessary to define the article's design.

(2) The functional qualification specifications to be used to qualify each production article to ensure compliance with this TSO.

(3) Equipment calibration procedures.

(4) Corrective maintenance procedures within 12 months after TSO authorization.

(5) Schematic drawings.

(6) Wiring diagrams.

(7) The results of the environmental qualification tests conducted in accordance with RTCA/DO-160C.

c. Furnished Data. One copy of the data and information specified in paragraphs 5(a)(1) through (8).

6. AVAILABILITY OF REFERENCE DOCUMENTS.

a. Copies of SAE AS 4914, Revision A, may be purchased from: Society of Automotive Engineers Inc., Department 331, 400 Commonwealth Drive, Warrendale, Pennsylvania 15096.

b. Copies of RTCA Document No. DO-160C and revisions may be purchased from: RTCA Inc., 1140 Connecticut Avenue, NW., Suite 1020, Washington, D.C. 20036-4001.

c. Federal Aviation Regulations Part 21, Subpart O, may be purchased from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

d. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.



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